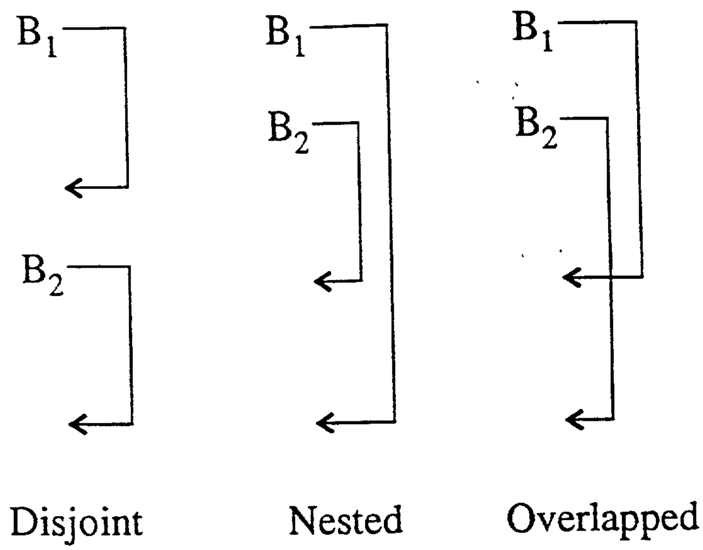
B1
B2
B1
B2
B1
B2
Disjoint
Nested
Overlapped

FIG. 1

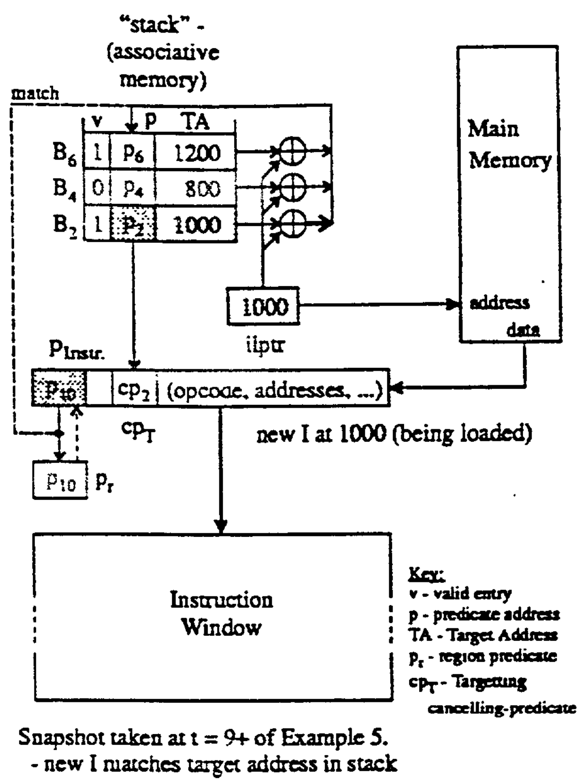
"stack" -
(associative
memory)
match
v
p
TA
B6
1
P6
1200
B4
0
P4
800
B2
1
P2
1000
Main
Memory
address
data
1000
ilptr
PInstr.
P10
cp2
(opcode, addresses, ...)
cpT
new I at 1000 (being loaded)
P10
Pr
Instruction
Window
Key:
v - valid entry
p - predicate address
TA - Target Address
Pr - region predicate
cpT - Targetting
cancelling-predicate
Snapshot taken at t = 9+ of Example 5.
- new I matches target address in stack

FIG. 2

load time	address	code		predicate-assignment (at load time): stack B	v	p	TA	$p_{in}=p_r$	cp_{in}	predicate-use (at code execution time): p_{out}	cp_{out}	p_I - condition for I execution
1	100	I_1	z = x op y				empty	1	0	$p_1=1$	-	1
2	200	B_2	if (bc_2) goto 400	B_2	1	p_2	400	1	0	$p_2=\overline{bc_2}$	bc_2	1
3	300	I_3		B_2	1	p_2	400	p_2	0	-	-	$\overline{bc_2}$
4	400	I_4					empty	p_2	cp_2	$\overline{bc_2}+bc_2$	-	$\overline{bc_2}+bc_2=1$
5	500	I_5					empty	p_4	0	-	-	$p_4=1$
6	600	B_6	if (bc_6) goto 800	B_6	1	p_6	800	p_4	0	$\overline{bc_6}\cdot p_4$	$bc_6\cdot p_4$	1
7	700	I_7		B_6	1	p_6	800	p_6	0	-	-	$\overline{bc_6}$
8	800	I_8					empty	p_6	cp_6	$\overline{bc_6}+bc_6$	-	$\overline{bc_6}+bc_6=1$
9	900	I_9					empty	p_8	0	-	-	$p_6=1$

Equations - for "T": $p_I=p_{out}=p_{in}+cp_{in}$; for "B": $p_{out}=\overline{bc}\cdot p_{in}$, $cp_{out}=bc\cdot p_{in}$

FIG. 3

load time	address	code		predicate-assignment (at load time) stack B	v	p	TA	$p_{in}=p_r$	cp_{in}	predicate-use (at code execution time) p_{out}	cp_{out}	p_I - condition for I execution
1	100	I_1	z = x op y		empty			1	0	$p_1=1$	-	1
2	200	B_2	if (bc_2) goto 800	B_2	1	p_2	800	1	0	$p_2=\overline{bc_2}$	bc_2	1
3	300	I_3		B_2	1	p_2	800	p_2	0	-	-	$\overline{bc_2}$
4	400	B_4	if (bc_4) goto 600	B_4	1	p_4	600	p_2	0	$\overline{bc_4}\cdot p_2$	$bc_4\cdot p_2$	1
				B_2	1	p_2	800					
5	500	I_5		B_4	1	p_4	600	p_4	0	-	-	$\overline{bc_2}\cdot\overline{bc_4}$
				B_2	1	p_2	800					
6	600	I_6		B_2	1	p_2	800	p_4	cp_4	p_4+cp_4	-	$\overline{bc_4}\cdot\overline{bc_2}+bc_4\cdot\overline{bc_2}=\overline{bc_2}$
7	700	I_7		B_2	1	p_2	800	p_6	0	-	-	$\overline{bc_2}$
8	800	I_8			empty			p_6	cp_2	p_6+cp_2	-	$\overline{bc_2}+bc_2=1$
9	900	I_9			empty			p_8	0	-	-	1

Equations - for "I": $p_I=p_{out}=p_{in}+cp_{in}$; for "B": $p_{out}=\overline{bc}\cdot p_{in}$, $cp_{out}=bc\cdot p_{in}$

FIG. 4

load time	address	code		predicate-assignment (at load time) stack B v p TA	$p_{in}=p_r$	cp_{in}	predicate-use (at code execution time) p_{out}	cp_{out}	p_I - condition for I execution
1	100	I_1	z = x op y	empty	1	0	$p_1=1$	-	1
2	200	B_2	if (bc_2) goto 600	B_2 1 p_2 600	1	0	$p_2=\overline{bc}_2$	bc_2	1
3	300	I_3		B_2 1 p_2 600	p_2	0	-	-	$\overline{bc}_2$
4	400	B_4	if (bc_4) goto 800	B_4 1 p_4 800 B_2 1 p_2 600	p_2	0	$\overline{bc}_4 \cdot p_2$	$bc_4 \cdot p_2$	1
5	500	I_5		B_4 1 p_4 800 B_2 1 p_2 600	p_4	0	-	-	$\overline{bc}_4 \cdot \overline{bc}_2$
6	600	I_6		B_4 1 p_4 800 B_2 0 p_2 600	p_4	cp_2	p_4+cp_2	-	$(\overline{bc}_4 \cdot \overline{bc}_2)+bc_2=\overline{bc}_4+bc_2$
7	700	I_7		B_4 1 p_4 800 B_2 0 p_2 600	p_6	0	-	-	$\overline{bc}_4+bc_2$
8	800	I_8		empty	p_6	cp_4	p_6+cp_4	-	$\overline{bc}_4+bc_2+(bc_4 \cdot \overline{bc}_2)=1$
9	900	I_9		empty	p_8	0	-	-	1

Equations - for "T": $p_I=p_{out}=p_{in}+cp_{in}$; for "B": $p_{out}=\overline{bc} \cdot p_{in}$, $cp_{out}=bc \cdot p_{in}$

FIG. 5

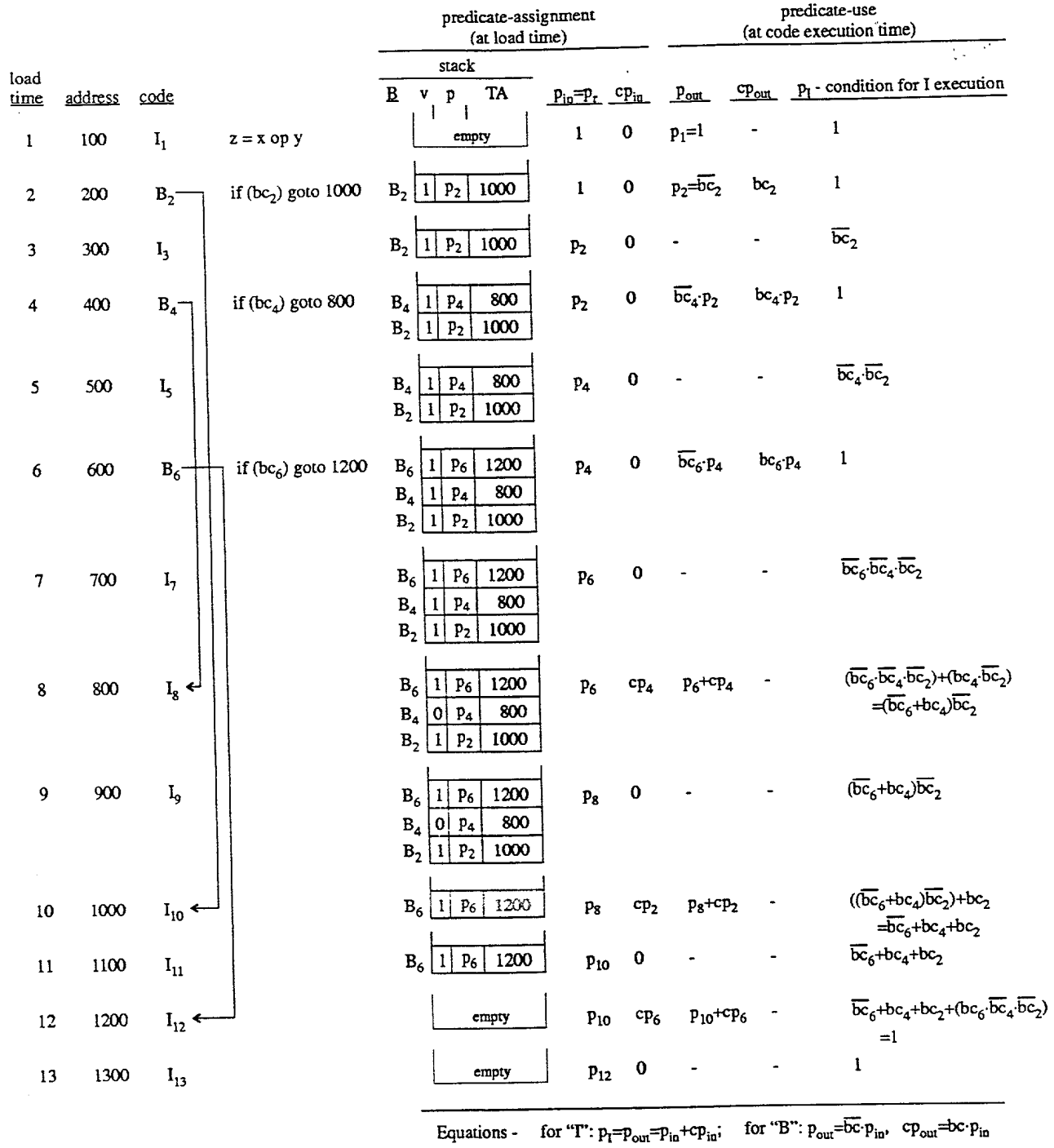
predicate-assignment (at load time)
predicate-use (at code execution time)
stack
load time
address
code
B
v
p
TA
$p_{in}=p_r$
cp_{in}
p_{out}
cp_{out}
p_1 - condition for I execution
1 100 I_1 z = x op y
empty
1 0 $p_1=1$ - 1
2 200 B_2 if (bc_2) goto 1000
B_2 1 p_2 1000
1 0 $p_2=\overline{bc}_2$ bc_2 1
3 300 I_3
B_2 1 p_2 1000
p_2 0 - - $\overline{bc}_2$
4 400 B_4 if (bc_4) goto 800
B_4 1 p_4 800
B_2 1 p_2 1000
p_2 0 $\overline{bc}_4 \cdot p_2$ $bc_4 \cdot p_2$ 1
5 500 I_5
B_4 1 p_4 800
B_2 1 p_2 1000
p_4 0 - - $\overline{bc}_4 \cdot \overline{bc}_2$
6 600 B_6 if (bc_6) goto 1200
B_6 1 p_6 1200
B_4 1 p_4 800
B_2 1 p_2 1000
p_4 0 $\overline{bc}_6 \cdot p_4$ $bc_6 \cdot p_4$ 1
7 700 I_7
B_6 1 p_6 1200
B_4 1 p_4 800
B_2 1 p_2 1000
p_6 0 - - $\overline{bc}_6 \cdot \overline{bc}_4 \cdot \overline{bc}_2$
8 800 I_8
B_6 1 p_6 1200
B_4 0 p_4 800
B_2 1 p_2 1000
p_6 cp_4 p_6+cp_4 - $(\overline{bc}_6 \cdot \overline{bc}_4 \cdot \overline{bc}_2)+(bc_4 \cdot \overline{bc}_2)$ $=(\overline{bc}_6+bc_4)\overline{bc}_2$
9 900 I_9
B_6 1 p_6 1200
B_4 0 p_4 800
B_2 1 p_2 1000
p_8 0 - - $(\overline{bc}_6+bc_4)\overline{bc}_2$
10 1000 I_{10}
B_6 1 p_6 1200
p_8 cp_2 p_8+cp_2 - $((\overline{bc}_6+bc_4)\overline{bc}_2)+bc_2$ $=\overline{bc}_6+bc_4+bc_2$
11 1100 I_{11}
B_6 1 p_6 1200
p_{10} 0 - - $\overline{bc}_6+bc_4+bc_2$
12 1200 I_{12}
empty
p_{10} cp_6 $p_{10}+cp_6$ - $\overline{bc}_6+bc_4+bc_2+(bc_6 \cdot \overline{bc}_4 \cdot \overline{bc}_2)$ =1
13 1300 I_{13}
empty
p_{12} 0 - - 1
Equations - for "I": $p_I=p_{out}=p_{in}+cp_{in}$; for "B": $p_{out}=\overline{bc} \cdot p_{in}$, $cp_{out}=bc \cdot p_{in}$

FIG. 6